

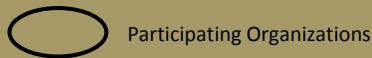


Plumas Energy Efficiency and Renewables Management Action Plan (PEER MAP)

Community Scale Renewable Energy Workshop
California Energy Commission

July 29, 2015

Plumas Energy Efficiency and Renewables Management Action Plan (PEER MAP)



Value of Increasing Biomass Utilization

- Reduce fire risk
- Improve forest health
- Improve air quality and reduce black carbon emissions
- Stabilize heating costs
- Create local jobs
- Reduce fossil fuel use
- Utilize abundant, local resource

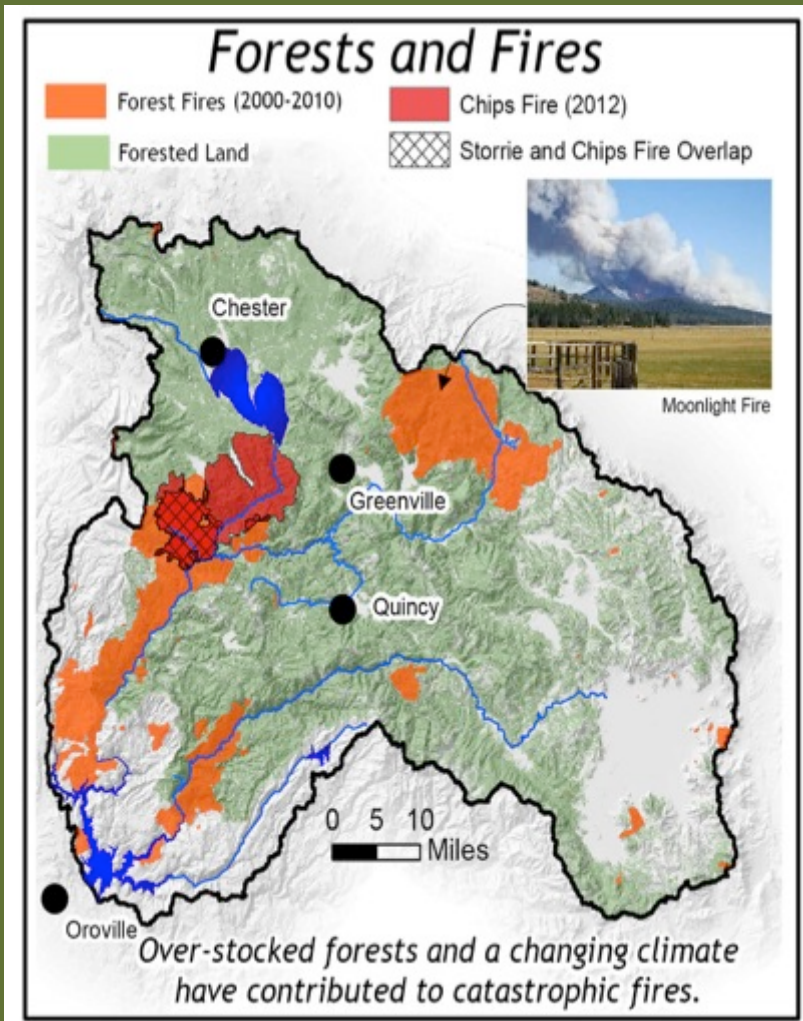
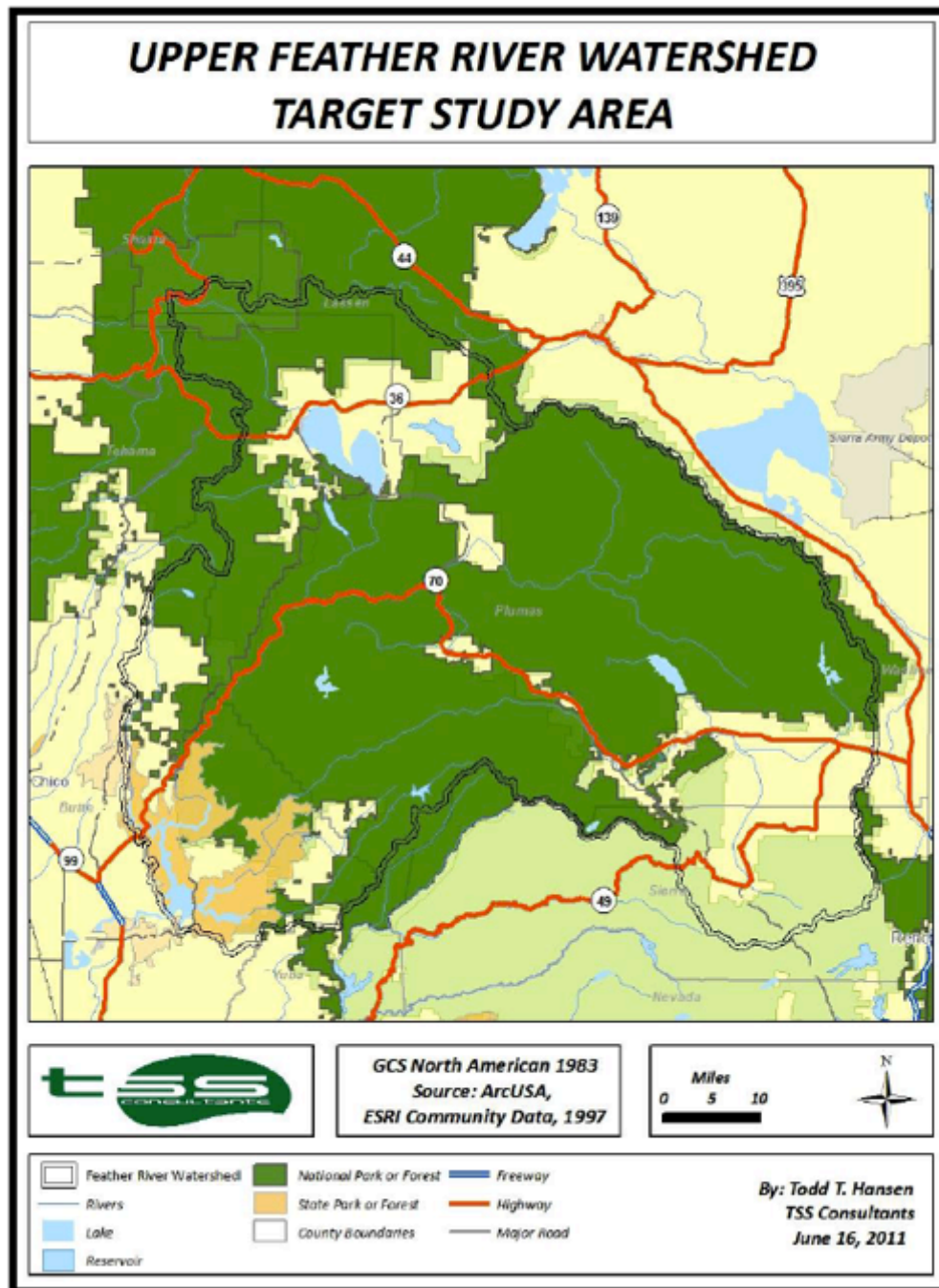


Figure 1. Upper Feather River Watershed Target Study Area



Forest Biomass Material Potentially Available from Forest Operations on Public and Private Land within Study Area.

| Biomass Material Source | Bone Dry Tons Year | |
|---|--------------------|----------------|
| | Low Range | High Range |
| Timber Harvest Residuals | 81,120 | 109,750 |
| Fuels Treatment/Restoration/Timber Stand Improvement Activities | 51,250 | 96,250 |
| Fuels Treatment Activities - Fire Safe Council and similar | 550 | 1,150 |
| Total | 132,920 | 207,150 |

TSS Consultants, 2012, Prepared for the Sierra Institute

Stakeholder Outreach

Plumas County:

- Plumas Unified School District
- Fire Safe Council
- County Officials
- Hospital Administrators
- Feather River College
- Portola City Council
- Plumas National Forest
- Forestry Professionals

Regional:

- US Forest Service
- State Agencies
- UC Berkley
- State Wood Energy Team
- Biomass Working Group
- Other Communities

Objectives:

- Identify critical public facilities
- Develop effective Advisory Body

Danielle Banchio, Registered Professional Forester #2808

Nick Boyd, Feather River College Director of Facilities

David Keller, Plumas County Community Development Commission

Charles Plopper, Professor Emeritus, UC Davis

Dony Sawchuk, Plumas County Director of Facility Services

John Sheehan, former Executive Director of Plumas Corporation

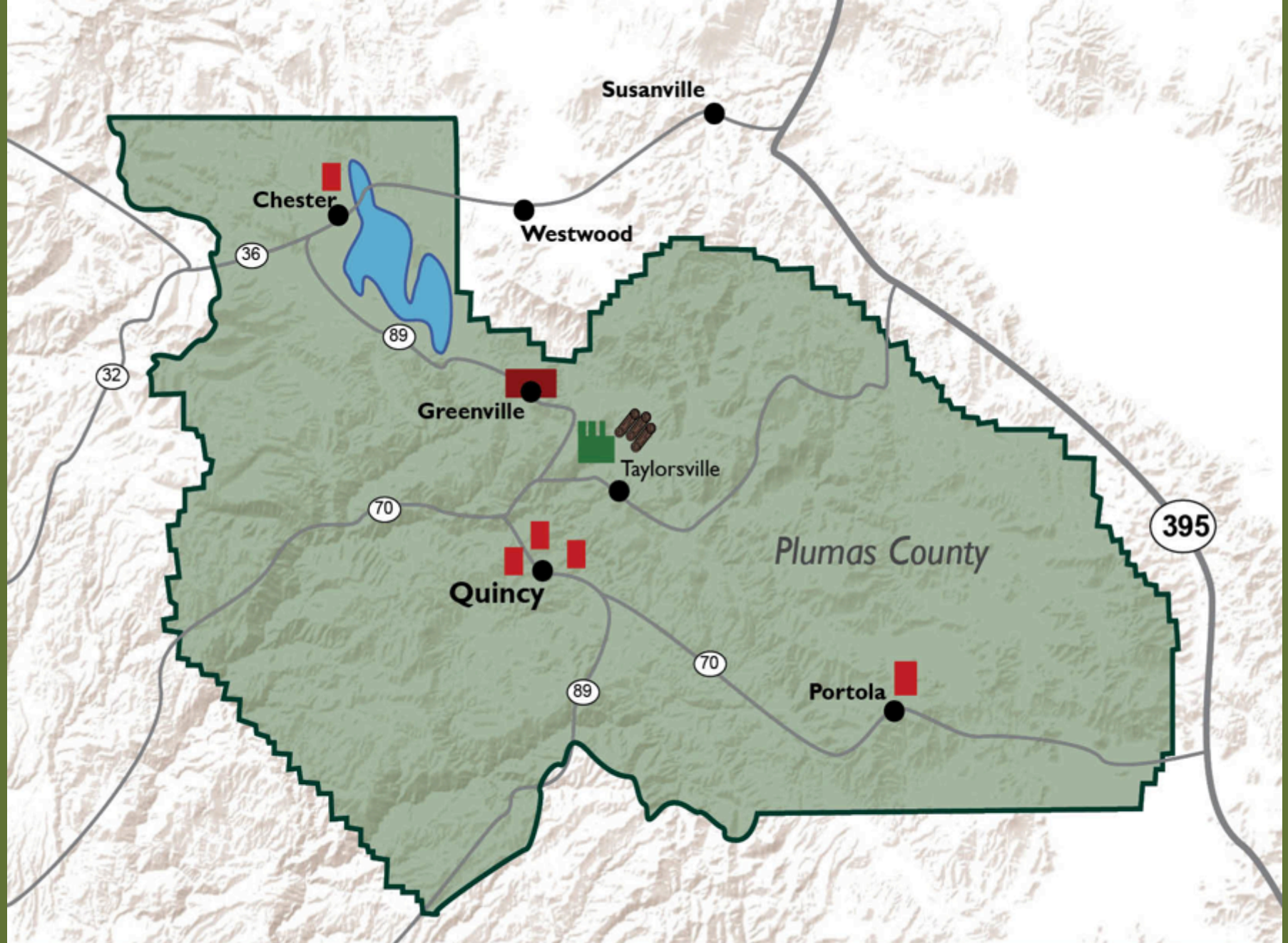
Lori Simpson, Plumas County Supervisor District Four

Elaine Vercruysse, Logging Systems Planner with the Plumas National Forest

Randy Wilson, Plumas County Planning Director

Biomass Utilization in Plumas County

| Biomass Thermal Opportunities | Current Heating Costs (annually) | Fuel Type | Gallons Used (annually) | Biomass Used (annually) | Savings (annually) |
|--|----------------------------------|----------------|-------------------------|-------------------------|--------------------|
| Portola District Heating Facility | | | | | |
| <i>Eastern Plumas Heath Care</i> | \$ 147,500.00 | diesel fuel | 37,000 | 400 bdt | \$25,075.00 |
| <i>Portola High School</i> | \$ 79,500.00 | heating oil | 22,640 | 210 bdt | \$13,515.00 |
| <i>Portola City Hall</i> | \$ 4,700.00 | propane | 2,582 | 15 bdt | \$799.00 |
| <i>Portola Library</i> | \$ 5,500.00 | propane | 2,750 | 15 bdt | \$935.00 |
| <i>Portola USPS Building</i> | \$ 4,000.00 | propane | 2,300 | 15 bdt | \$680.00 |
| County HHS/FRC | \$ 135,000.00 | electric/Prop. | 17,000 | 800 bdt | \$45,000.00 |
| USFS Supervisors Office | \$ 37,000.00 | prop/fuel oil | 11,500/3,260 | 100 bdt | \$24,500.00 |
| USFS Mt. Hough RD | \$ 35,000.00 | propane | 14,340 | 115 bdt | \$20,625.00 |
| Greenville K-12 School | \$ 112,500.00 | diesel fuel | 30,646 | 275 bdt | \$19,125.00 |
| Chester Heating Facility | | | | | |
| <i>Wildwood Asst. Living Fclty</i> | \$ 60,000.00 | propane | 26,000 | 175 bdt | \$38,125.00 |
| <i>Seneca Hospital</i> | \$ 80,000.00 | diesel Fuel | 21,000 | 210 bdt | \$53,750.00 |
| <div><div><div>Green Tons/Acre</div><div>10 to 15</div></div><div><div>Bone Dry Tons/Acre</div><div>8 to 12</div></div><div><div>Avg. price of chips (raw mtrl).</div><div>\$60.00</div></div><div><div>Retail chips/bdt (thermal)</div><div>\$125.00</div></div><div><div>Price of heat</div><div>83%</div></div><div><div><u>Thermal Network</u></div><div>Total biomass needed</div><div>1,705 bdt</div><div>Acres treated</div><div>150 - 250</div></div><div><div><u>3 MW CHP</u></div><div>Total biomass needed</div><div>25,000 bdt</div><div>Acres treated</div><div>2,100 - 3,200</div></div></div> <div><div><div>Increased biomass utilization in Plumas County will have the following annual results:</div><div><div><div>County wide savings:</div><div>\$197,129</div></div><div><div>Fossil fuel gallons offset:</div><div>170,018</div></div><div><div>Homes powered:</div><div>3000</div></div><div><div>Tons of biomass used:</div><div>27,000</div></div><div><div>Acres treated:</div><div>2,250 - 3,500</div></div></div><div><div>KEY</div><div>bdt: bone dry ton</div><div>CHP:combined heat and power</div></div></div></div> | | | | | |



Stand Alone Boiler



District Heat



CHP Plant



Chip Processing Facility

Greenville Community Energy Facility



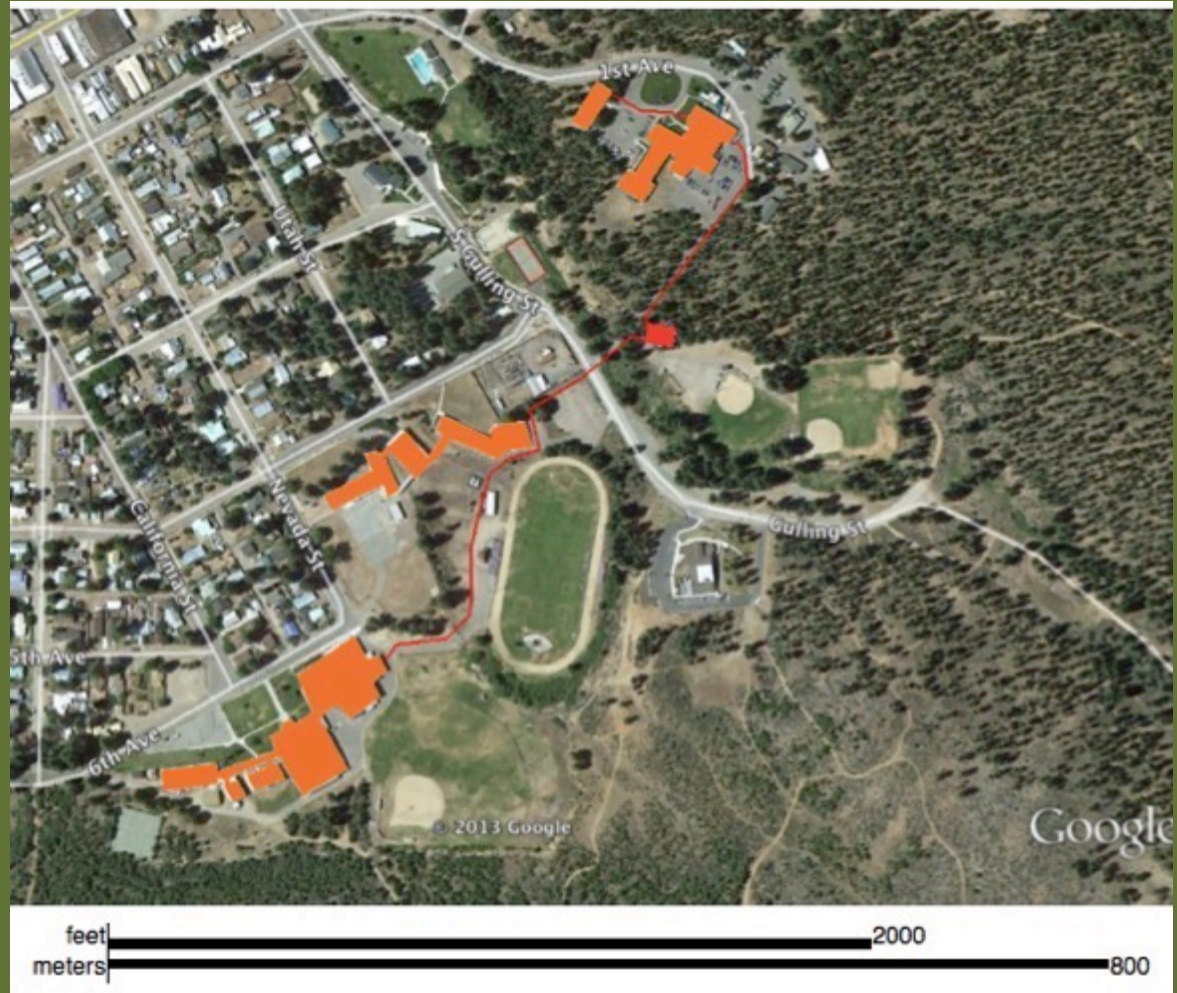
Portola District Energy

Current Status:

- 63,000 gallons of fuel oil in 2011-2012 for heat
- Cost approx. \$236,000
- Aging infrastructure

Project Economics:

- Purchase boiler spec'd for clean chips (25% mc)
- ESP for air quality
- Cost of \$3.27 million
- Consume 680 BDTs/year
- Meet 94% of heat needs
- Cost approx. \$34,000
 - Plus ~\$14k propane



Crescent Mills Site

Physical Attributes:

- Former LP mill
- Zoned heavy industrial
- Access off HW 89
- Water and power on site
- PG&E Substation

Due Diligence:

- Community/County support
- Phase I & II Environmental Assessment
- Tanks removed
- Contaminated soil removed
- One year well monitoring
- Contract with landowner

Centrally located



From Planning to Implementation

- Design and engineering at various facilities Underway
- Work with OSHPD Fall 2014/continuing
- Proposal for boiler at Health and Human Service Building/Feather River College Funded! March 2015, Project launch July 2015
- Proposal for preliminary engineering for old court house Funded! January 2015 (U.S.F.S.)
- Proposal for Boiler at Easter Plumas Health Care Summer/Fall 2015 (Economic Development Administration)
- Implement Chip Processing facility Summer/Fall 2015
- Assist other partners Ongoing
- Secure funding
- Boilers online at PC HHS and FRC Fall 2016

Regulatory, Policy, and Institutional Innovation

Tasks:

- Engage Relevant Agencies and Institutions
- Prepare Successful Permitting Pathways

- CEC
- CPUC
- Governors Office
- US Forest Service
- State Wood Energy Team
- Biomass Working Group
- Sierra Nevada Conservancy
- Office of Statewide Health Planning and Development
- Northern Sierra Air Quality Management District
- US EPA/Ecology & Environment
- Plumas County Planning Dept.
- Community Service Districts



Promoting Replicability Through Dissemination

- Working with other communities (USDA RCDI grant)
- State Wood Energy Team
- Biomass Working Group



Moving Projects forward...

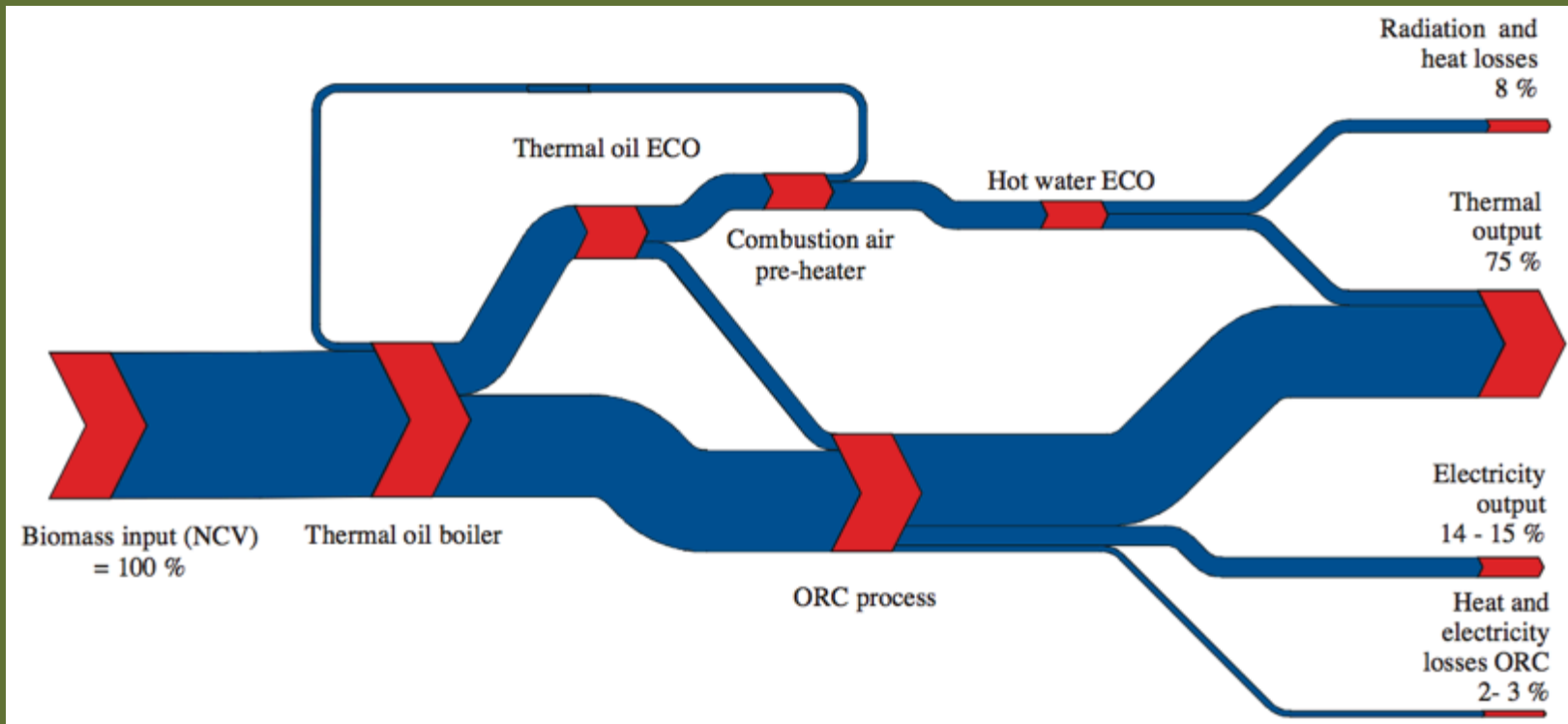
Opportunities

- Community support
- CEC and USFS support
- EPIC funds
- USDA RUS funds
- USDA RCDI funds
- Technology is proving itself
- Rim Fire/Moonlight Fire
- Drought
- State and federal policy
- Local events
- Time

Challenges

- Support \neq buy in
- Capital costs
- Past failure
- Distrust of unknown
- Questions about fuel supply
- Scale of project
- SB1122 specifics are unknown to locals/ambiguous
- PG&E has disproportionate amount of power
- Lack of state or federal incentives

Biomass Combined Heat and Power (CHP)

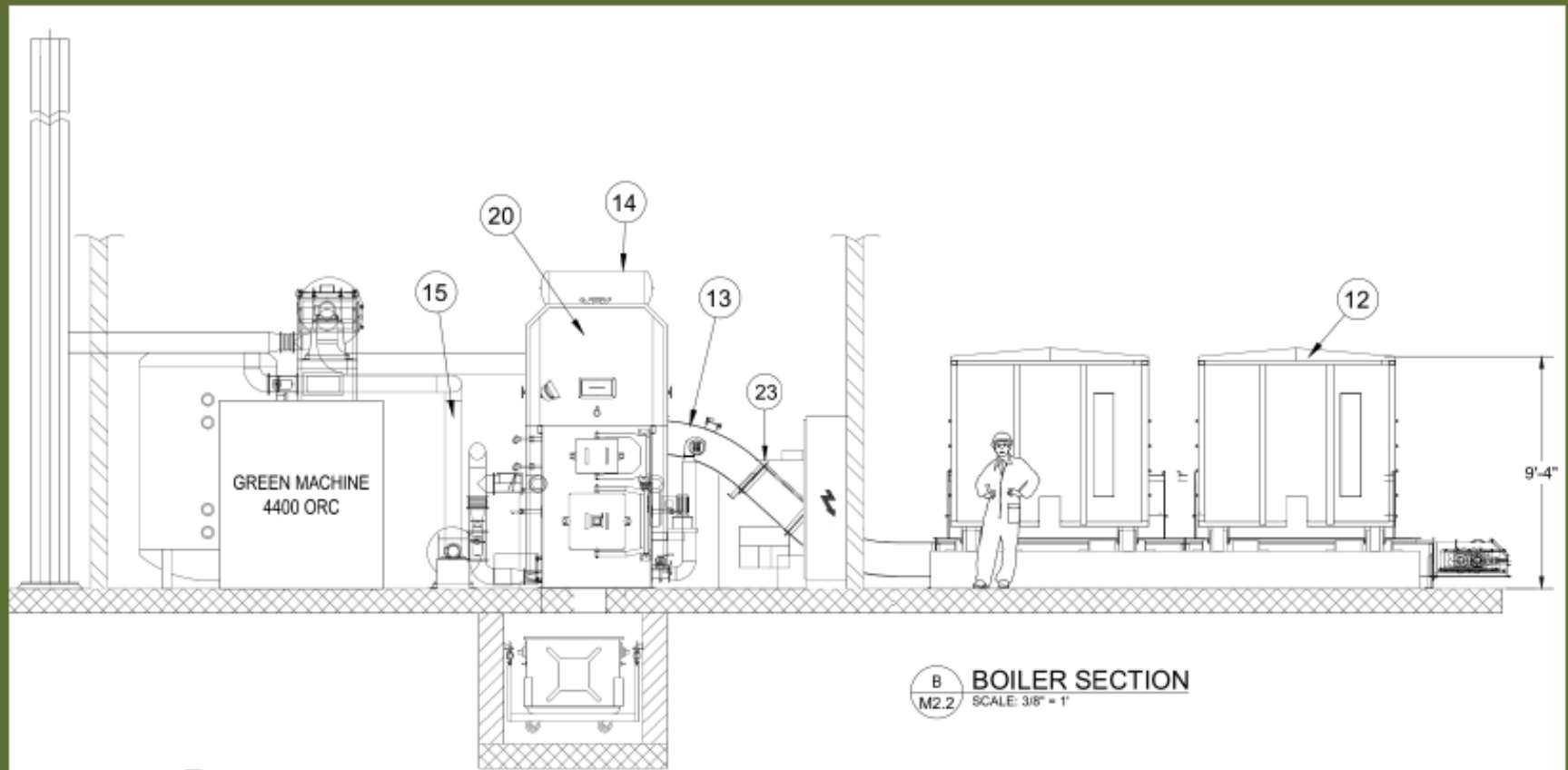


CHP Boiler in Quincy, CA

Project funded under CEC PON-14-307

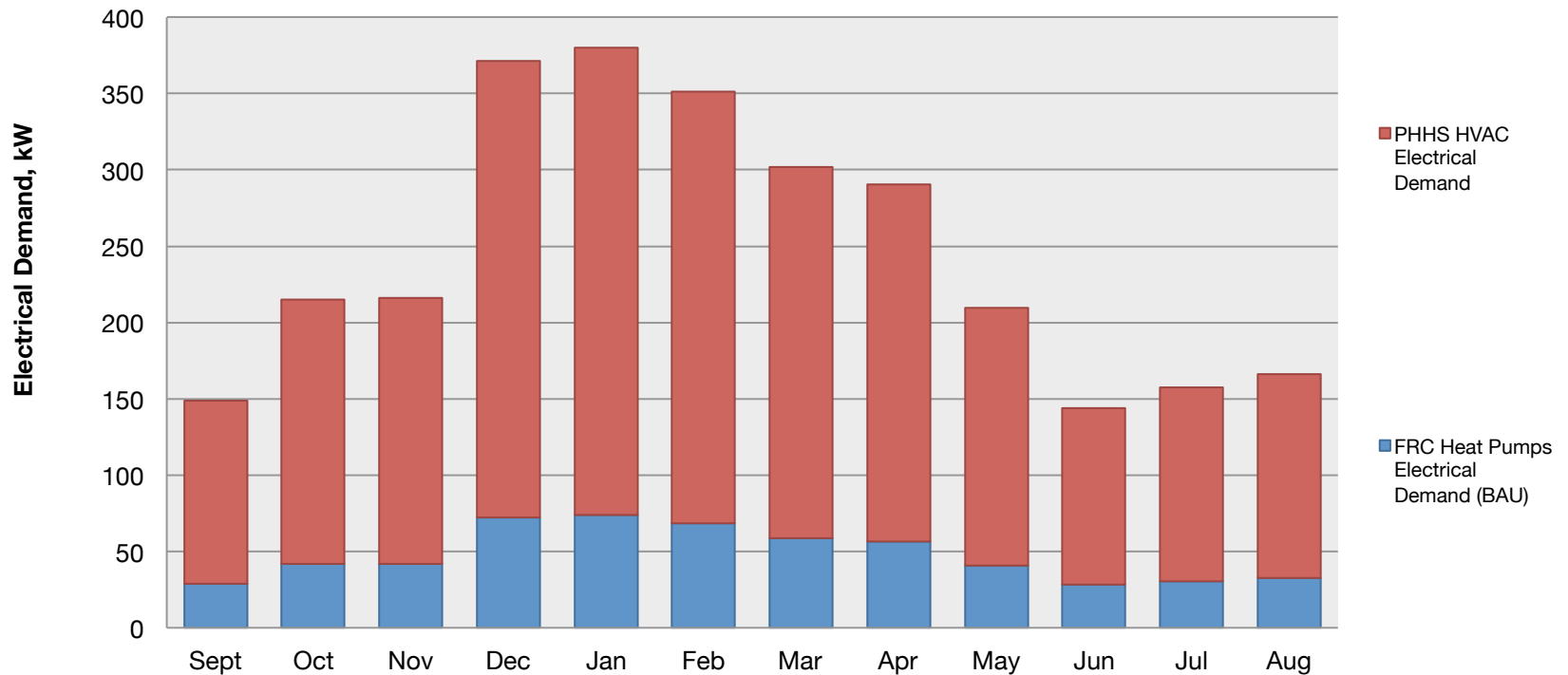


Biomass Boiler System



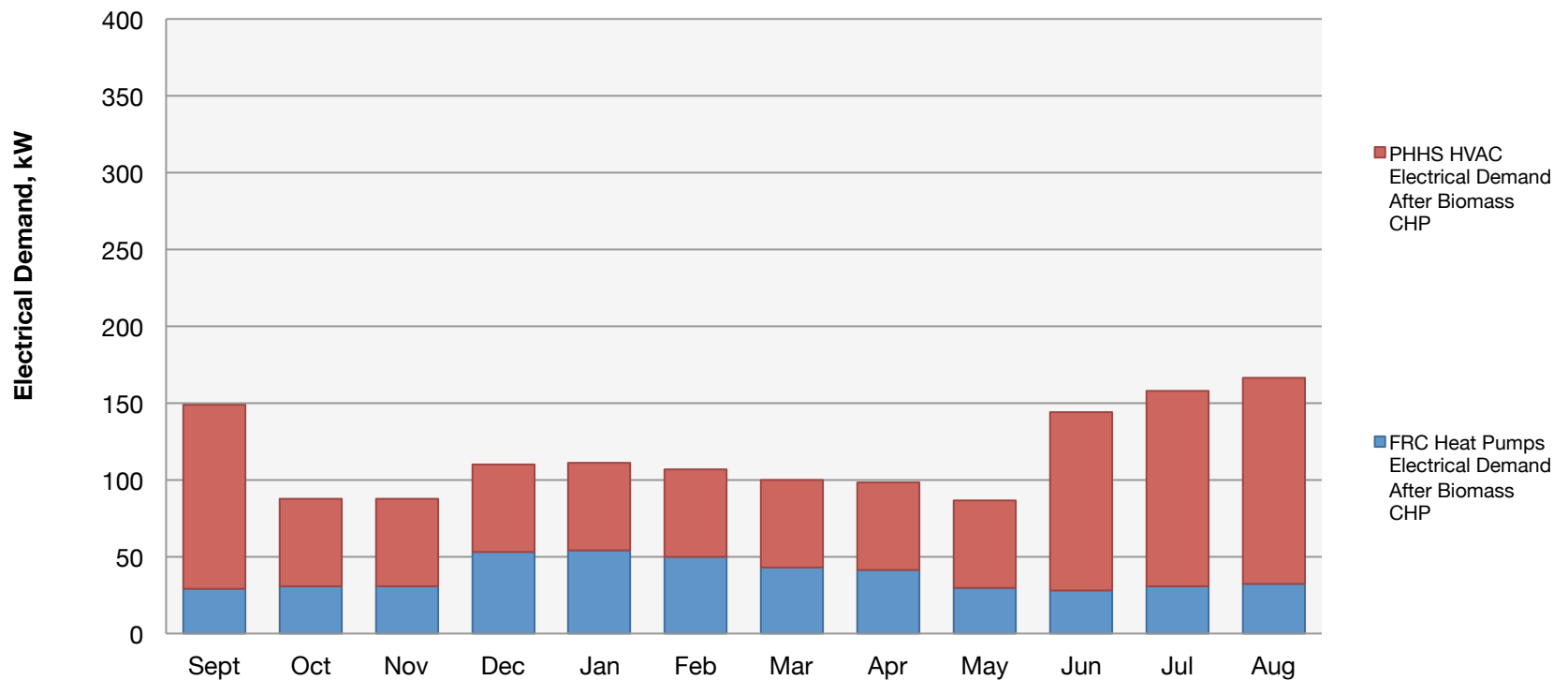
Electrical Demand Reduction

HVAC Peak Load, Business as Usual



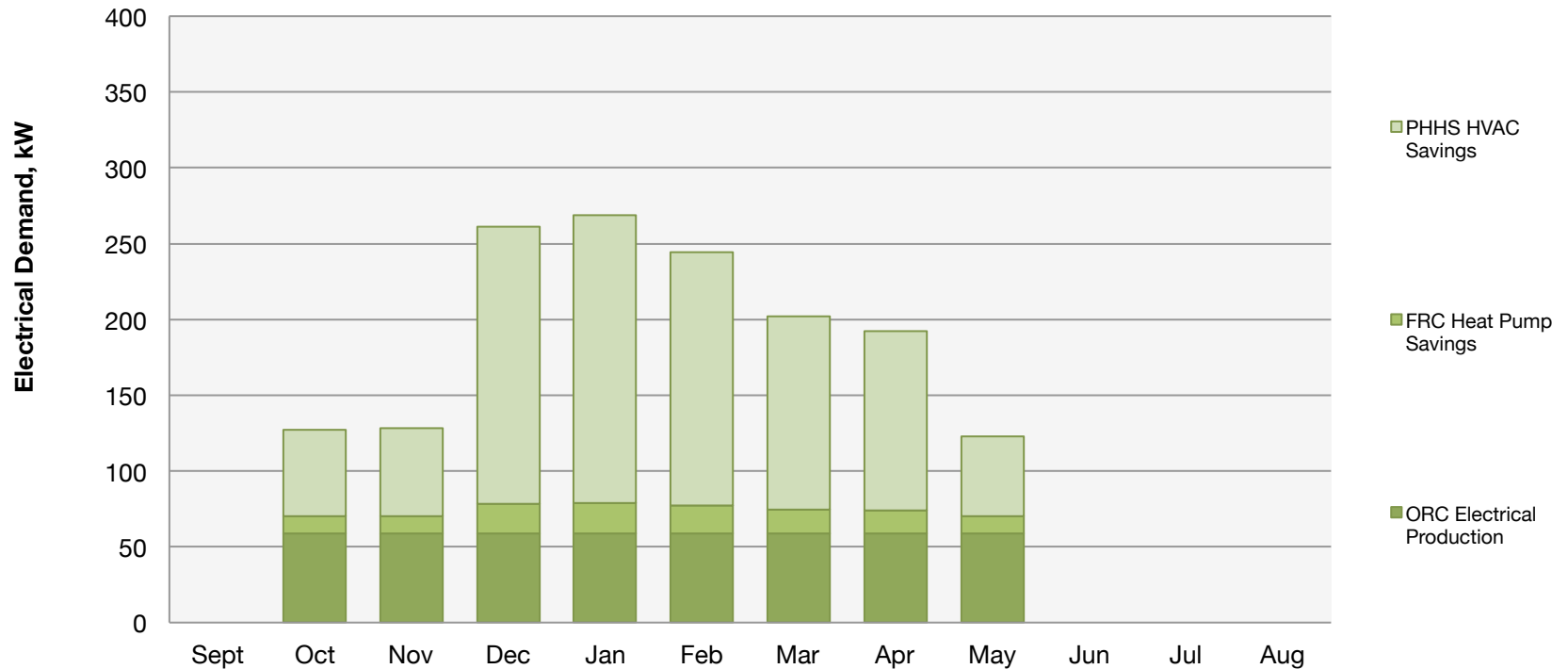
Electrical Demand Reduction

HVAC Peak Load, after Biomass CHP



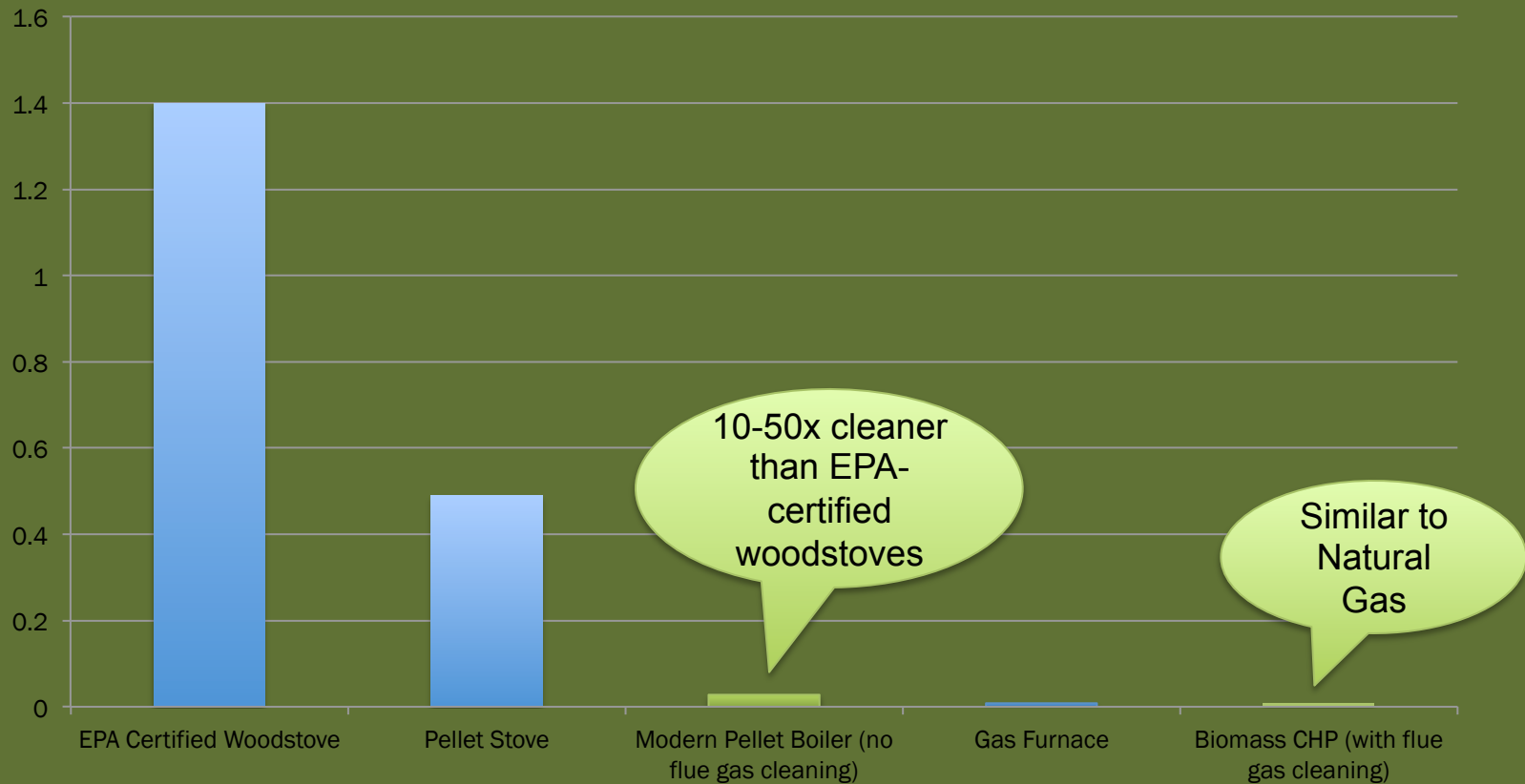
Electrical Demand Reduction

Peak Load Reduction from Biomass CHP



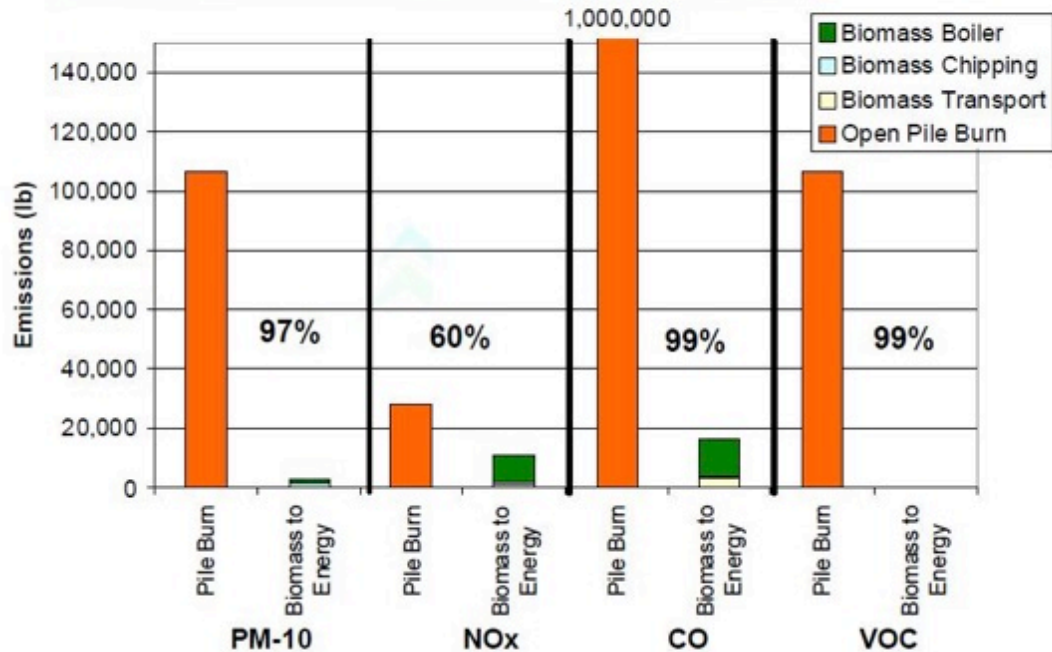
Clean

Particulate Emissions (lbs/mmBtu)





CRITERIA AIR POLLUTANT REDUCTIONS



Emissions based on burning 5,000 BDT of biomass

Air Quality

Key Considerations:

What goes in? How is it operated?
occurs?

What monitoring

Bioenergy in Plumas County

For more information please contact

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